



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Stephan LUTGEN et al.

Serial No.: 10/783,143

Filed: February 19, 2004

For: Optically Pumped Laser Device for Generating
Laser Pulses

Examiner: NGUYEN, T. N.
Group Art: 2828

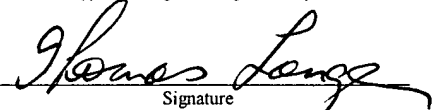
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PRE-APPEAL BRIEF REQUEST FOR REVIEW

SIR:

This is a Request for a Panel Review of Issues on Appeal. A Notice of Appeal is filed concurrently herewith in response to the final Office Action dated July 14, 2008. No amendments are being filed with this Request.

Arguments supporting the Request for Review begin on page 2 of this paper.

ARGUMENTS

Claims 1, 2 and 4-26 are pending in the application, among which claims 1, 23 and 26 are independent. Applicants respectfully request that the following issues be reviewed.

**A. Claims 1-22 and 25 were incorrectly rejected under
35 U.S.C. §112, first paragraph, as being indefinite**

In item no. 2 of the Office Action, the Office Action identified a number of alleged claim defects, which applicants will address in the order that they appear.

The Office Action begins by stating that:

[t]he claim contains subject matter not described in the specification in such a way as to enable one skilled in the art to understand what is the edge emitting optical pump source is, especially when the application's specification discloses the electrodes supply the pump radiation source (section [0057]). *See*, page 2 of Office Action. (Emphasis added.)

With all due respect, this statement is unfortunately typical of the unclear and sometimes incomprehensible manner in which this Examiner expresses himself, which has resulted in complicating and unduly lengthening the prosecution of this application.

Based on applicants' best understanding of the above statements, applicants provide the following reply. The pump radiation source recited in the claims can be an edge emitting laser (see, claim 1, Fig. 2 and para. [0056] of the published application, i.e., US 2004/0190567). During operation of the laser device, the edge emitting lasers 3a, 3b are supplied with a current from electrodes 25 to emit radiation. Electrodes 25 merely supply a current to the pump radiation source, but do not constitute a part thereof. Light emitted by the edge emitting lasers in the lateral direction optically pumps the vertically emitting quantum well structure. Edge emitting lasers have long been well known and in widespread use, and the structure and operation thereof are indisputably well within the knowledge and skill of one with ordinary skill in the art. Therefore, the requirements of 35 U.S.C. §112, first paragraph, have been met.

Next, the Office Action alleges that:

the specification (section [0055-0057] discloses and (Fig. 2) shows the monolithically integrated edged-emitting laser pump radiation source 3a, 3b locate or equivalent to mirror the mirror layer #5. *Id.*

The Office Action proceeds and assumes that:

it is the mirror layer #5 resonates light from external pump source and/or from electrical source to emit optical output that pump the active layer as it exit the semiconductor laser. *Id.*

The above assumption is incorrect. Applicants clearly state in paragraph [0056] of the published application that the vertically emitting quantum well structure 4 is positioned between the two pump radiation sources 3a, 3b. In addition, Fig. 2 illustrates the pump radiation 24 being emitted by the two pump radiation sources 3a, 3b into the quantum well structure 4 (see arrows). Even though reference characters 3a, 3b are positioned below mirror layer 5 (for convenience), they actually identify the regions level with and on either side of the quantum well structure 4. On the other hand, mirror layer 5 is part of the resonator (see par. [0049]) which does not include the edge emitting lasers.

Subsequently, the Office Action concludes that:

the electrodes are the pump radiation source, because if it is not the pump radiation source there is not need for the electrode. *Id.*

Applicants have repeatedly explained in their previous Responses/Amendments that electrodes cannot be a pump radiation source because they do not emit radiation. As is recited in claim 1, disclosed in paragraph [0056], and shown in Fig. 2 of the subject application, it is the edge emitting lasers that are pump radiation sources, not the electrodes. Simply put, the Office Action is dead wrong in interpreting “electrodes” as being “pump radiation sources”.

Finally, the Office Action takes the position that:

there is insufficient structure and function in the drawing and specification to enable one skilled in the art to understand the edge emitting optical pump source. *See*, pages 2-3 of Office Action.

Applicants respectfully traverse. The specification and the drawings of the subject application describe and show various elements of pump radiation sources, including their active layers (the regions where the pump radiation illustrated by arrows origins) and electrodes (top and bottom electrodes 25) which supply a current into the active layers. Based on such disclosure, one skilled in the art will fully appreciate the structure and function of the pump radiation sources, which can be edge emitting lasers.

In view of all the above, the 35 U.S.C. § 112 rejection must be withdrawn.

B. The Office Action incorrectly interpreted US Pub. No. 2003/0012247 (“Chilla”) as anticipating independent claims 1 and 23

Independent claim 1 recites “the first pump radiation source being an edge emitting laser” and “at least one mode-locker.” Independent claim 23 recites “at least one mode-locker.”

The Office Action interprets the Bragg mirror 14 in Chilla to be an edge emitting laser as recited in claim 1 (see, item no. 4 of Office Action). In supporting the above interpretation, the Office Action refers to paragraph [0022] of Chilla and elaborates that:

Bragg mirror (Fig. 2: 14), is the same as mirror layer #5 in Applicant specification, that is edge emitting from the mirror and pump radiation source into the active layer #16.

Based on applicants' best understanding of the above elaboration and other positions taken by the Office Action, applicants perceive that the Examiner relies on the incorrect and unfounded position that the monolithically integrated pump radiation source in the claimed invention is located at or equivalent to the Bragg mirror 5. In fact, as pointed out above, the claimed edge emitting laser is level with the quantum well structure 4, and is not "the same as mirror layer #5." As regards Chilla, Bragg mirror 14 of Chilla is merely one of the resonator mirrors of the laser. Such Bragg mirror 14 of Chilla has nothing to do with an edge emitting laser or a pump radiation source, as recited in independent claim 1.

The Office Action also alleges that sections [0021] and [0037] of Chilla disclose a mode locker (see, page 3 of Office Action). Such interpretation of Chilla is unfounded. As one skilled in the art will appreciate, a mode-locker operates to generate short laser pulses. Chilla does not disclose any element that has such function of a mode-locker. In the above cited paragraphs of Chilla, Chilla teaches minimization of feedback effects when focusing the laser radiation into an optical fiber (see, para. [0021]) and frequency doubling (see, para. [0037]). Therefore, Chilla does not teach the "at least one mode-locker" recited in independent claims 1 and 23.

In fact, Chilla does not even mention that the laser is provided to generate pulsed radiation. The Office Action alleges that "Chilla (section [0022]-[0025]) discloses the short laser pulses 970nm" (see, item no. 10 on page 9 of Office Action). Applicants disagree. None of these cited paragraphs or other portions of Chilla discusses short laser pulses. Paragraph [0024] of Chilla teaches that the operating wavelength of the laser is 970nm, which has nothing to do with the emission of short laser pulses. Nor does the standing wave of the laser radiation shown in Fig. 3 and described in paragraphs [0023]-[0025] of Chilla have anything to do with a laser pulse. The Office Action misinterpreted paragraphs [0022]-[0025] of Chilla as teaching the short laser pulses recited in the claimed invention.

In view of the above, independent claims 1 and 23 are not anticipated by Chilla.

C. **Office Action incorrectly interpreted WO 01/59895
to Paschotta to reject independent claim 26**

Independent claim 26 recites that “the phase compensation element is a chirped mirror which is integrated in the semiconductor body of the semiconductor laser.”

The Office Action interprets Paschotta’s saturable absorber mirror (SESAM) 5 as the phase compensating chirped mirror recited in claim 26. However, the saturable absorber mirror 5 in Paschotta is neither a chirped mirror nor integrated in the semiconductor body of the semiconductor laser (see Fig. 1 of Paschotta). The saturable absorber mirror 5 is arranged outside the semiconductor body in the external resonator. In fact, none of the cited portions of Paschotta (i.e., Abstract and pg. 11, ll. 15-22) discloses phase compensation or a chirped mirror, as is recited in independent claim 26.

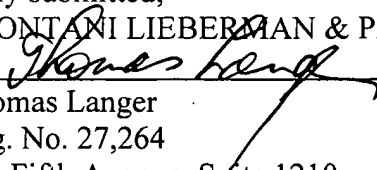
The Office Action also interprets the Bragg mirror in Paschotta as an equivalent mirror that is capable of performing the same function of a chirped mirror, as recited in claim 26 (see item no. 6 on page 6 of Office Action). Applicants disagree. The Bragg mirror 4 in Paschotta is not a phase compensation element, much less a chirped mirror, as recited in independent claim 26. Moreover, the Office Action refers to “sections [0022-0025]” of Paschotta when addressing the claim features of “a chirped mirror” (see, item no. 6 of Office Action). Paschotta however does not have any sections numbered [0022]-[0025].

Finally, the Office Action rejected independent claim 26 under 35 U.S.C. § 102(a) in the heading of item no. 5 in the Office Action, but did not explain how Paschotta is applied in rejecting this claim.

In view of the above, independent claim 26 patentably distinguishes the invention over Paschotta.

CONCLUSION

In light of the foregoing, independent claims 1 and 26, as well as their dependent claims 2, 4-22, and 24-25, patentably distinguish the invention over the cited art.

Respectfully submitted,
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